

YW



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/330,096	06/11/1999	JUN ENOMOTO	1110-0240P	8973
7590 02/25/2005 BIRCH STEWART KOLASCH & BIRCH P O BOX 747 FALLS CHURCH, VA 22040			EXAMINER MISLEH, JUSTIN P	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/330,096

Applicant(s)

ENOMOTO, JUN

Examiner

Justin P Misleh

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 February 2005 has been entered.

Response to Arguments

2. Applicant's arguments with respect to Claims 1 - 10 have been considered but are moot in view of the new grounds of rejection.

Claim Objections

3. **Claims 1, 9, and 10** are objected to because of the following informalities: lack of clarity and precision.

Claim 1 introduces therein, "digital image data" and "processed image data". Furthermore, Claim 1 references "entire digital image data", "image data", or "shooting" without a previous introduction thereof. To overcome a lack of clarity and precision, it is imperative strictly reference that which has been previously introduced. For the purposes of examination, the Examiner will interpret the "lens characteristic correction unit" limitation as follows:

"a lens characteristic correction unit for performing, by using the stored lens characteristic of said image forming lens and a position of a frame image photographed, a process

Art Unit: 2612

of correcting a deterioration of an image quality derived from said image forming lens upon an [the] entire digital image data, to obtain processed image data, before a [the] shooting of a next frame of an image, in which processed image data is stored in said image memory prior to the shooting of the next frame, or during the shooting of the next frame onward, in which the processed image data is stored in said image memory during or after the shooting of the next frame”.

4. **Claims 9 and 10** each present a similar issue. Appropriate correction for Claims 1, 9 and 10 is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1 – 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekine et al. in view of Yokota et al.

Notes Regarding Sekine et al.

○ Sekine et al. is silent with regard to a data processing unit for generating digital image data, however, a video signal processing circuit (20) is provided, which performs known processes on the outputs of the image sensor element. A recording circuit (22) records the color video output of the video signal processing circuit (20) on a video tape together with an aberration information code which is digitized and provided by a ROM (32). Thus, since the aberration information code is recorded together with the color video output onto the video tape,

Art Unit: 2612

it is inherent that either the known processes performed by the video processing circuit (20) or the recording circuit (22) at least include a step to digitize the color video output. If the color video output were not digitized, it would be impossible to record it together with the digitized aberration information code on the video tape.

- Sekine et al. disclose, as stated in column 3 (lines 34 – 36 and 49 – 67), an aberration information code, which has been digitized by the A/D (30). The aberration information provided to the A/D (30) is generated by the potentiometers (24, 26, and 28) of the zoom lens (12). The potentiometers (24, 26, and 28) detect the object distance, focal length, aperture value of the iris of the zoom lens (12), respectively. An A/D (30) is arranged to digitize the outputs of the potentiometers (24, 26, and 28). The digitized potentiometer (24, 26, and 28) outputs are provided to a digital microcomputer (34), which compares them to tabular codes stored in ROM (32) to generate a digital aberration information code to be recorded with the color video output, on a video tape, in the recording circuit (22). Therefore, for each new object distance, focal length, and/or aperture value of the iris of the zoom lens (12), a new aberration information code is generated and recorded together with the color video output.

- Chromatic aberration of magnification is caused by a difference in light wavelength. The focal length or magnification of a lens varies according to the wavelength of each type of incident light. Sekine et al. clearly states, in column 3, that the focal length of the zoom lens (12) at the time of shooting the image is included in the aberration information code. Thus, chromatic aberration of magnification is corrected. Marginal lamination is a drop in brightness at the edges of a photograph. Sekine et al. also clearly states, in column 3, that the aperture value of the iris of the zoom lens (12) at the time of shooting the image is included in the aberration information

Art Unit: 2612

code. Thus, marginal lumination is corrected. Distortion aberration is inherent to all lenses. The aberration information code includes a plurality of aberration information of the zoom lens (12), also as clearly stated in column 3. Thus, as indicated in Sekine et al., in column 6 (lines 31 – 36), image distortion is corrected in accordance with aberration information which indicates any aberration that takes place at the time of shooting wherein image distortion results from the aberration of the photo-taking lens (12). Therefore, Sekine et al. corrects for a distortion aberration, chromatic aberration of magnification, and marginal lumination.

7. For **Claim 1** (please see objection above), Sekine et al. disclose, as shown in figures 1 and 2, a digital image shooting device, comprising:

- an image forming zoom lens (zoom lens 12);

- an image sensor element (solid-state image sensors 14, 16, and 18);

- a data processing unit for processing an output signal from said image sensor element (14, 16, and 18) into digital image data (see notes above);

- an image memory (video tape) for storing the digital image data (color video output) and a lens characteristic (aberration information code) relating to the image forming lens (zoom lens 12; see notes above);

- a lens characteristic correction unit (figure 2 and as stated in column 4, lines 9 – 13 and 18 – 27) for performing, by using the stored lens characteristic of said image forming lens and a position of a frame image photographed (stored in the video tape), a process of correcting a position of a frame image photographed (by means of image memory 38), a process of correcting a deterioration of an image quality derived from said image forming lens upon the entire digital image data (by means of computing circuit 40);

wherein the image quality deterioration corrected by the lens characteristic correction unit (figure 2) is at least one of a chromatic aberration of magnification, defocusing, and a decrease in marginal lumination (see notes above).

Claim 1 requires **at least one of a** chromatic aberration of magnification, defocusing, and a decrease in marginal lumination. Thus, since Sekine et al. disclose the correction of chromatic aberration of magnification and decrease in marginal lumination, individually and combined, as noted above, Sekine et al. disclose at least one of a chromatic aberration of magnification, defocusing, and a decrease in marginal lumination.

Sekine et al. teach that the process of correcting image quality does not have to be carried out in real time. Therefore, Sekine et al. does not disclose a process of correcting image quality wherein the image data is processed then stored in an image memory prior to capturing the next image or in an alternative mode, the image data is processed while at the same time image shooting device captures another image and the processed image data is either stored in the image memory during the capturing of the image or directly thereafter.

On the other hand, Yokota et al. also disclose a digital image shooting device that is concerned with correcting image quality. More specifically, Yokota et al. disclose, as shown in figures 1 and 2 and as stated in column 6 (line 49) – column 8 (line 13), an image controlling circuit (102) for use in a digital image shooting device (see figure 1) that is provided to correct distortions of an image due to aberrations of the optical system. Furthermore, Yokota et al. teach, as demonstrated in the flowchart of figure 2, a process of correcting image quality wherein the image data is processed (Steps S4 – S6) then stored in an image memory (“image recording device”; see Step S11 and column 8, lines 9 – 13) prior to capturing the next frame (The

Art Unit: 2612

flowchart concerns the capturing and correcting of a single image prior to permanent storage and, as clearly shown, the next frame is captured again at the beginning of the flowchart.). Finally, Yokota et al. is not required to provide the “alternative mode” as described above because “or” is claimed.

As stated in column 1 (lines 43 – 60) of Yokota et al., at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included a process of correcting image quality wherein the image data is processed then stored in an image memory prior to capturing the next frame, as taught by Yokota et al., in the digital image shooting device, disclosed by Sekine et al., for the advantage of reducing computing processing, reducing computing processing time, and reducing circuit complexity.

8. As for **Claim 2**, Sekine et al. disclose the digital image shooting device according to Claim 1 wherein said image quality deterioration further includes a distortion aberration (see notes above).

9. As for **Claim 3**, Sekine et al. disclose a digital image shooting device according to Claim 1 wherein the lens correction unit (figure 2) corrects the deterioration of the image quality. However, Sekine et al. is silent with respect to a process of compressing the digital image data.

Official Notice is taken that both the concepts and advantages of compressing the digital image data are well know and expected in the art. Since, at the time the invention was made, loss less compression is impossible, it would have been obvious to compress the corrected digital image data to prevent deterioration of the aberration information code and further deterioration of image quality.

Art Unit: 2612

10. As for **Claim 4**, Sekine et al. disclose the digital image shooting device according to Claim 1 wherein the lens characteristic unit (figure 2) performs correction before the photographing of a next frame or during the photographing of the next frame onward. Sekine et al. disclose a digital image shooting device that operates in real time with the option of operating the digital image shooting device not in real time, as indicated in column 4 (lines 64 – 66). Also Sekine et al. disclose, as stated in column 6 (lines 13 – 18), that the digital image data (color video output) of the frame that performed the correction by the lens characteristic unit (figure 2) is stored in said image memory (video tape).

11. As for **Claim 5**, Sekine et al. disclose the digital image shooting device according to Claim 1, wherein said image memory is a built-in image recording medium or a removable image recording medium (see column 3, lines 13 – 15).

12. As for **Claim 6**, Sekine et al. disclose the digital image shooting device according to Claim 1, further comprising an image display unit (see figure 2) for displaying the photographed image, wherein an image based on the digital image data **which is** or is not performed the correction process in said lens characteristic correction unit (see figure 2), is displayed on said image display unit, and the digital image data performed the correction process in said lens characteristic correction unit (see figure 2), is stored in a memory (image memory 38).

13. As for **Claim 7**, Sekine et al. disclose the digital image shooting device according to Claim 1 wherein an image of a region larger than a photographic region confirmed by a photographer is formed on said image sensor element (14, 16, and 18) in accordance with missing of pixels which is caused as a result of the correction by said lens characteristic

Art Unit: 2612

correction unit (figure 2). As stated in column 4 (lines 50 – 56), the correction performed by the lens characteristic unit (figure 2) involves interpolation between adjacent picture elements.

14. As for **Claim 8**, Sekine et al. disclose a single image formation lens (zoom lens 12) with potentiometers (24, 26, and 28). The potentiometers (24, 26, and 28) detect the object distance, focal length, aperture value of the iris of the zoom lens (12), respectively. An A/D (30) is arranged to digitize the outputs of the potentiometers (24, 26, and 28). The digitized potentiometer (24, 26, and 28) outputs are provided to a digital microcomputer (34), which compares them to tabular codes stored in ROM (32) to generate a digital aberration information code to be recorded with the color video output, on a video tape, in the recording circuit (22). Therefore, for each new object distance, focal length, and/or aperture value of the iris of the zoom lens (12), a new aberration information code is generated and recorded together with the color video output. Since, Sekine et al. disclose the generation of the aberration information code from the aberration information of three potentiometers (24, 26, and 28) and the tabular codes provided in ROM (32), at the time the invention was made, one with ordinary skill in the art would have been motivated to include a plurality of image forming lenses, rather than a single image forming lens, wherein each image forming lens is provided with three potentiometers to provide aberration information to the ROM (32). Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included a plurality of image forming lenses.

15. For **Claim 9** (please see objection above), Sekine et al. disclose a digital image shooting device, comprising:

an image forming zoom lens (zoom lens 12);

Art Unit: 2612

an image sensor element (solid-state image sensors 14, 16, and 18);

a data processing unit for processing an output signal from said image sensor element (14, 16, and 18) into digital image data (see notes above);

an image memory (video tape) for storing the digital image data (color video output) and a lens characteristic (aberration information code) relating to a plurality of focal lengths (see notes above) of the zoom lens (12);

a lens characteristic correction unit (figure 2 and as stated in column 4, lines 9 – 13 and 18 – 27) for performing, by using the stored lens characteristic of said image forming lens and a position of a frame image photographed (stored in the video tape), a process of correcting a position of a frame image photographed (by means of image memory 38), a process of correcting a deterioration of an image quality derived from said image forming lens upon the entire digital image data (by means of computing circuit 40);

wherein the lens characteristic (aberration information code) is converted at the plurality of focal lengths to the focal length when the image is photographed (see notes above).

Sekine et al. teach that the process of correcting image quality does not have to be carried out in real time. Therefore, Sekine et al. does not disclose a process of correcting image quality wherein the image data is processed then stored in an image memory prior to capturing the next image or in an alternative mode, the image data is processed while at the same time image shooting device captures another image and the processed image data is either stored in the image memory during the capturing of the image or directly thereafter.

On the other hand, Yokota et al. also disclose a digital image shooting device that is concerned with correcting image quality. More specifically, Yokota et al. disclose, as shown in

Art Unit: 2612

figures 1 and 2 and as stated in column 6 (line 49) – column 8 (line 13), an image controlling circuit (102) for use in a digital image shooting device (see figure 1) that is provided to correct distortions of an image due to aberrations of the optical system. Furthermore, Yokota et al. teach, as demonstrated in the flowchart of figure 2, a process of correcting image quality wherein the image data is processed (Steps S4 – S6) then stored in an image memory (“image recording device”; see Step S11 and column 8, lines 9 – 13) prior to capturing the next frame (The flowchart concerns the capturing and correcting of a single image prior to permanent storage and, as clearly shown, the next frame is captured again at the beginning of the flowchart.). Finally, Yokota et al. is not required to provide the “alternative mode” as described above because “or” is claimed.

As stated in column 1 (lines 43 – 60) of Yokota et al., at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included a process of correcting image quality wherein the image data is processed then stored in an image memory prior to capturing the next frame, as taught by Yokota et al., in the digital image shooting device, disclosed by Sekine et al., for the advantage of reducing computing processing, reducing computing processing time, and reducing circuit complexity.

16. For **Claim 10**, Sekine et al. disclose a digital image shooting device, comprising:

an image forming lens (zoom lens 12);

an image sensor element (solid-state image sensors 14, 16, and 18) optically coupled to said lens;

Art Unit: 2612

a data processing unit operatively connected to said image sensor element (14, 16, and 18) and receiving an output signal from said image sensor element (14, 16, and 18) and converting the output signal into digital image data (see notes above);

an image memory (video tape) operatively connected to said data processing unit, the digital image data (color video output) and a lens characteristic (aberration information code) relating to the image forming lens (zoom lens 12) being stored in said image memory (video tape; see notes above);

a lens characteristic correction unit (figure 2 and as stated in column 4, lines 9 – 13, 18 – 27, and 50 – 56 and column 6, lines 31 – 36) operatively connected to said image memory (video tape), said lens characteristic correction unit (figure 2) correcting a deterioration of an image quality derived from said image forming lens (zoom lens 12) upon the digital image data (color video output) by using the stored lens characteristic of said image forming lens (zoom lens 12) and a position of a frame image photographed (stored in the video tape);

wherein the image quality deterioration corrected by the lens characteristic correction unit (figure 2) is a distortion aberration and a chromatic aberration of magnification (see notes above).

Sekine et al. teach that the process of correcting image quality does not have to be carried out in real time. Therefore, Sekine et al. does not disclose a process of correcting image quality wherein the image data is processed then stored in an image memory prior to capturing the next image or in an alternative mode, the image data is processed while at the same time image shooting device captures another image and the processed image data is either stored in the image memory during the capturing of the image or directly thereafter.

On the other hand, Yokota et al. also disclose a digital image shooting device that is concerned with correcting image quality. More specifically, Yokota et al. disclose, as shown in figures 1 and 2 and as stated in column 6 (line 49) – column 8 (line 13), an image controlling circuit (102) for use in a digital image shooting device (see figure 1) that is provided to correct distortions of an image due to aberrations of the optical system. Furthermore, Yokota et al. teach, as demonstrated in the flowchart of figure 2, a process of correcting image quality wherein the image data is processed (Steps S4 – S6) then stored in an image memory (“image recording device”; see Step S11 and column 8, lines 9 – 13) prior to capturing the next frame (The flowchart concerns the capturing and correcting of a single image prior to permanent storage and, as clearly shown, the next frame is captured again at the beginning of the flowchart.). Finally, Yokota et al. is not required to provide the “alternative mode” as described above because “or” is claimed.

As stated in column 1 (lines 43 – 60) of Yokota et al., at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included a process of correcting image quality wherein the image data is processed then stored in an image memory prior to capturing the next frame, as taught by Yokota et al., in the digital image shooting device, disclosed by Sekine et al., for the advantage of reducing computing processing, reducing computing processing time, and reducing circuit complexity.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The following is a brief description of the cited prior art not used in the rejections, but cited on attached form PTO-892:

- **Macy et al. and Harada et al.** each disclose a digital image shooting device that improves image quality, via processing, from a deterioration of image quality due to optical system aberrations, wherein a processed image is obtained before shooting of a next frame of an image in which image data is stored in said image memory prior to shooting.

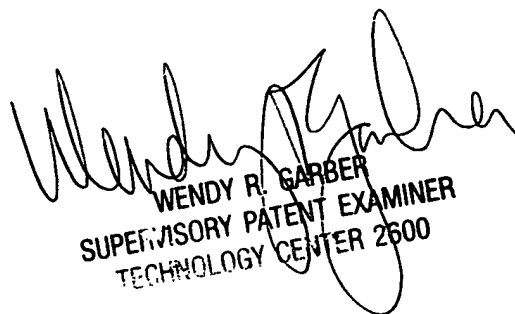
Art Unit: 2612

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090 (571.272.7313 ~ March 2005). The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:00 PM and on alternating Fridays from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
February 17, 2005


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600